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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte NITZAN PELEG, AMIR BAR-OR,
YUVAL SHERMAN, and EDWARD BORTNIKOV

Appeal 2009-001471
Application 10/690,762¹
Technology Center 2100

Decided: May 10, 2010

Before JOHN A. JEFFERY, JAMES D. THOMAS, and
JEAN R. HOMERE, *Administrative Patent Judges*.

HOMERE, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ Filed on October 22, 2003. The real party in interest is Hewlett Packard Development Co., L.P. (App. Br. 1.)

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) (2002) from the Examiner's final rejection of claims 1 through 30. (App. Br. 2.) We have jurisdiction under 35 U.S.C. § 6(b) (2008).

We affirm.

Appellants' Invention

Appellants invented a method, system, and computer-readable medium for improving the availability of materialized views in databases that employ a deferred refresh policy. (Spec. 3, para. [0004].) According to Appellants, the claimed invention utilizes materialized views in order to make processing queries more efficient. (*Id.* at 9, para. [0027].)

Illustrative Claim

Independent claim 1 further illustrates the invention as follows:

1. A system that allows a table and a materialized view to be available while the materialized view is being refreshed, the system comprising:

a materialized view that is derived at least in part from a table;

a refresh log that contains a plurality of entries, each of the plurality of entries corresponding to a change in the table, each of the plurality of entries comprising an epoch identifier adapted to synchronize the refresh log between refreshing operations; and

a refresh manager that performs a refresh operation on the materialized view in multiple steps by (a) successively reading a first subset of the plurality of entries indicated by a specific epoch identifier from the refresh log, (b) identifying a second subset of the plurality of entries from within the first subset of the plurality of entries, the second subset of the plurality of entries falling within a primary key value boundary and (c) applying the second subset of the plurality of entries to the materialized view.

Prior Art Relied Upon

The Examiner relies on the following prior art as evidence of unpatentability:

Witkowski	6,125,360	Sep. 26, 2000
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Rejections on Appeal²

The Examiner rejects the claims on appeal as follows:

Claims 1 through 4 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Claims 1 through 30 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Witkowski.

Appellants' Contentions

1. Appellants contend that the system of independent claim 1 produces a useful, concrete, and tangible result because it enables more efficient data queries. (App. Br. 9-10.) Further, Appellants argue that a system is generally defined as a group of devices or artificial objects or an organization forming a network especially for distributing or serving a common purpose. (Reply Br. 2.) Therefore, Appellants allege that the system of independent claim 1 includes sufficient structure to be directed to statutory subject matter under § 101. (*Id.*)

2. Appellants contend that Witkowski's disclosure of a System Change Number ("SCN"), or logical number assigned to transactions in commit time order, does not teach "an epoch identifier adapted to synchronize the refresh log between refreshing operations," as recited in independent claim 1. (App. Br. 10-11.) In particular, Appellants argue that

² The Examiner withdrew the 35 U.S.C. § 112, second paragraph rejection of claims 1, 5, 9, 16, and 27. (Ans. 2, 13.)

Witkowski's SCN acts like a timestamp because it indicates when a transaction was committed, whereas the claimed epoch identifier changes only when a materialized view is being refreshed. (App. Br. 12; Reply Br. 3.) Further, Appellants allege that the Examiner misinterpreted the steps used in the claimed invention. (App. Br. 12; Reply Br. 3-4.) In particular, Appellants contend that the Examiner misconstrued the claimed steps as different invocations of the refresh operation, whereas the claimed invention calls for steps that describe iterations of a refresh operation. (*Id.*)

Examiner's Findings and Conclusions

1. The Examiner finds that the system of independent claim 1 lacks hardware to perform the functionality of the claim and, therefore, amounts to software *per se*. (Ans. 13-14.) Thus, the Examiner finds that independent claim 1 is directed to non-statutory subject matter under § 101 (*Id.*)

2. The Examiner finds that Witkowski's disclosure of an SCN teaches the time at which a change was made to a row in a table. (Ans. 16.) Further, the Examiner finds that Witkowski's disclosure of keeping the refresh log current by recording the SCNs between refresh operations teaches synchronizing the changes made to a table. (*Id.* at 17.) Therefore, the Examiner finds that Witkowski's disclosure teaches "an epoch identifier adapted to synchronize the refresh log between refreshing operations," as recited in independent claim 1. (*Id.* at 16-17.) Finally, the Examiner finds that independent claim 1 does not explicitly recite an iteration step and, therefore, the claimed steps can be broadly, but reasonably construed as different invocations of the refresh operation. (*Id.* at 18-19.)

II. ISSUES

1. Have Appellants shown that the Examiner erred in finding that the system of independent claim 1 is directed to software *per se* which constitutes non-statutory subject matter under § 101?

2. Have Appellants shown that the Examiner erred in finding that Witkowski anticipates independent claim 1? In particular, the issue turns on whether Witkowski teaches “an epoch identifier adapted to synchronize the refresh log between refreshing operations,” as recited in independent claim 1.

III. FINDINGS OF FACT

The following Findings of Fact (“FF”) are shown by a preponderance of the evidence.

Appellants’ Admission

1. Appellants define a system as “a group of devices or *artificial objects* or an organization forming a network esp. for distributing something or serving a common purpose.” (Reply Br. 2; *see also* WEBSTER’S NINTH NEW COLLEGIATE DICTIONARY (1989).) (Emphasis added.)

Witkowski

2. Witkowski generally relates to database systems and, in particular, to maintaining and performing incremental refreshes to materialized views that contain one-to-n lossless joins. (Abst.; col. 1, ll. 15-17.)

3. Witkowski discloses that an SCN is “a logical number assigned to transactions in commit time order.” (Col. 9, ll. 17-19.) Further, Witkowski discloses that each change within the database is associated with

an SCN, whereby the SCN indicates the time the change was made. (*Id.* at ll. 19-22.)

4. Witkowski Figure 4c depicts changes made to tables X and Y between time T1 and time T2. (Col. 16, ll. 18-20.) Witkowski discloses utilizing a snapshot to record changes that have been made to each table after the most recent materialized view refresh. (*Id.* at ll. 20-23.)

5. Witkowski's Figure 5 depicts a flow chart that illustrates an incremental refresh operation. (Col. 9, ll. 29-32.)

IV. PRINCIPLES OF LAW

Statutory Subject Matter

“The four categories [of § 101] together describe the exclusive reach of patentable subject matter. If a claim covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of § 101 even if the subject matter is otherwise new and useful.” *In re Nuijten*, 500 F.3d 1346, 1354 (Fed. Cir. 2007). A claim to a data structure *per se* is non-statutory. *See In re Warmerdam*, 33 F.3d 1354, 1360-61 (Fed. Cir. 1994). “Data structures not claimed as embodied in computer-readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer.” MPEP § 2106.01(I) (8th ed., Rev. 6, Sept. 2007) (citing *Warmerdam*, 33 F.3d at 1361). Similarly, a claim to a computer listing *per se* is non-statutory. *Id.* “[C]omputer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs, are not physical ‘things.’ They are neither computer components nor statutory processes, as they are not ‘acts’ being performed. Such claimed computer programs do not define any

structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized.” *Id.*

Claim Construction

“[T]he words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (citations omitted). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1313.

“[T]he PTO gives claims their ‘broadest reasonable interpretation.’” *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000)). “Moreover, limitations are not to be read into the claims from the specification.” *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989)). Our reviewing court has repeatedly warned against confining the claims to specific embodiments described in the specification. *Phillips v. AWH Corp.*, 415 F.3d at 1323.

Anticipation

In rejecting claims under 35 U.S.C. § 102, “[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375 (Fed. Cir. 2005) (citing *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565 (Fed. Cir. 1992)).

Anticipation of a patent claim requires a finding that the claim at issue “reads on” a prior art reference. In other words, if granting patent protection on the disputed claim would allow the patentee to exclude the public from practicing the prior art, then that claim is anticipated, regardless of whether it also covers subject matter not in the prior art.

Atlas Powder Co. v. IRECO, Inc., 190 F.3d 1342, 1346 (Fed Cir. 1999)
(internal citations omitted).

V. ANALYSIS

35 U.S.C. § 101 Rejection

Independent claim 1 recites, in relevant part, “[a] system that allows a table and a materialized view to be available while the materialized view is being refreshed, the system comprising: a materialized view...a refresh log...and a refresh manager...”.

As detailed in the Findings of Fact section above, Appellants define a system as a group of artificial objects forming a network especially for serving a common purpose. (FF 1.) In light of Appellants’ definition, we find that the claimed system may be construed solely as software and/or data constructs. Further, since the claimed software is not embodied in a computer-readable media, it represents computer listings *per se*, which are incapable of causing functional change in a computer. *See* MPEP § 2106.01(I); *see also Warmerdam*, 33 F.3d at 1361. It follows that Appellants have not shown that the Examiner erred in rejecting independent claim 1 as being directed to non-statutory subject matter.

Because dependent claims 2 through 4 also incorporate the deficiencies discussed above, we find that these claims are also directed to

non-statutory subject matter as set forth in our discussion of independent claim 1.

35 U.S.C. § 102(b) Rejection

Claim 1

Independent claim 1 recites, in relevant part, “an epoch identifier adapted to synchronize the refresh log between refreshing operations.”

We first consider the scope and meaning of the term “an epoch identifier,” which must be given the broadest reasonable interpretation consistent with Appellants’ disclosure, as explained in *In re Morris*, 127 F.3d 1048 (Fed. Cir. 1997):

[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.

Id. at 1054. *See also* *Zletz*, 893 F.2d at 321 (stating that “claims must be interpreted as broadly as their terms reasonably allow.”) Appellants’ Specification states the following:

[t]he epoch number may be used to identify a group of rows or records that have been added to the IUD log 100 since a previous refresh operation was performed.

(Spec. 11-12, para. [0033].)

Further, Appellants’ Specification states that:

[t]he use of epochs may be implemented in multiple ways. For example, *the epoch may be the timestamp* taken during the table lock period in the beginning of the refresh or it can be any other ever-increasing number.

(*Id.* at 16, para. [0044].) (Emphasis added)

Our reviewing court further states, “the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Phillips v. AWH Corp.*, 415 F.3d at 1321.

Upon reviewing Appellants’ Specification, we find that the claim term “an epoch identifier” may be broadly, but reasonably construed as a timestamp that denotes the time a row or record has been added to a log since a previous refresh operation.

As detailed in the Findings of Fact section, Witkowski discloses maintaining and performing incremental refreshes to materialized views. (FF 2.) In particular, Witkowski discloses associating each change or transaction within a database with an SCN. (FF 3.) The SCN is a number assigned to each change or transaction within the database denoting the time the corresponding change or transaction occurred. (*Id.*) Further, Witkowski discloses tracking the changes or transactions made to a table after the most recent materialized view refresh. (FF 4.)

We find that Witkowski’s disclosure teaches utilizing the SCN to track changes to a log since a previous refresh operation. In particular, we find that Witkowski’s disclosure of an SCN teaches a timestamp, or an incrementing number, assigned to changing records within a log denoting the time at which a respective change occurred. Therefore, consistent with the definition above, Witkowski’s SCN amounts to a timestamp that denotes the time a row or record has been added to a log since a previous refresh operation. Thus, we find the Witkowski teaches “an epoch identifier adapted to synchronize the refresh log between refreshing operations,” as recited in independent claim 1.

Further, we are not persuaded by Appellants' arguments that the Examiner misconstrued the claimed steps as different invocations of the refresh operation, whereas the claimed invention calls for steps that describe iterations of a refresh operation. (App. Br. 12; Reply Br. 3-4.). Appellants' arguments are not commensurate in scope with the claim language. While the claim does recite "perform[ing] a refresh operation on the materialized view in multiple steps," we find no evidence on the record before us that the claimed steps require an iteration or repetition of a refresh operation. Nonetheless, Witkowski discloses an incremental refresh operation (FF 5) which, in our view, teaches performing a refresh operation in multiple steps. It follows that Appellants have not shown that the Examiner erred in finding that Witkowski anticipates independent claim 1.

Claims 2 through 30

Appellants do not provide separate arguments for patentability with respect to independent claims 5, 9, 16, 23, and 27, and dependent claims 2 through 4, 6 through 8, 10 through 15, 17 through 22, 24 through 26, and 28 through 30. Therefore, we select independent claim 1 as representative of the cited claims. Consequently, Appellants have not shown error in the Examiner's rejection of independent claims 5, 9, 16, 23, and 27, and dependent claims 2 through 4, 6 through 8, 10 through 15, 17 through 22, 24 through 26, and 28 through 30, for the reasons set forth in our discussion of independent claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2009).

VI. CONCLUSIONS OF LAW

1. Appellants have not shown that the Examiner erred in rejecting claims 1 through 4 as being directed to non-statutory subject matter under 35 U.S.C. § 101.

2. Appellants have not shown that the Examiner erred in rejecting claims 1 through 30 as being anticipated under 35 U.S.C. § 102(b).

VII. DECISION

1. We affirm the Examiner's decision to reject claims 1 through 4 as being directed to non-statutory subject matter under 35 U.S.C. § 101.

2. We affirm the Examiner's decision to reject claims 1 through 30 as being anticipated under 35 U.S.C. § 102(b).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

Vsh

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